



Full wwPDB X-ray Structure Validation Report ⓘ

Jun 16, 2024 – 07:12 PM EDT

PDB ID : 5NFR
Title : Crystal structure of malate dehydrogenase from Plasmodium falciparum (PfMDH)
Authors : Lunev, S.; Romero, A.R.; Batista, F.A.; Wrenger, C.; Groves, M.R.
Deposited on : 2017-03-15
Resolution : 2.40 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.37.1
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.37.1

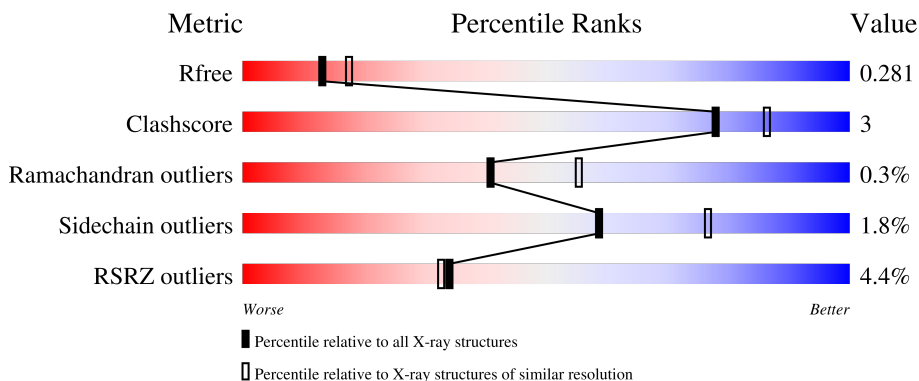
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.40 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	3907 (2.40-2.40)
Clashscore	141614	4398 (2.40-2.40)
Ramachandran outliers	138981	4318 (2.40-2.40)
Sidechain outliers	138945	4319 (2.40-2.40)
RSRZ outliers	127900	3811 (2.40-2.40)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	320	
1	B	320	
1	C	320	
1	D	320	
1	E	320	

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Mol	Chain	Length	Quality of chain
1	F	320	 2% 92% 5% ..
1	G	320	 5% 86% 7% ...
1	H	320	 7% 91% 6% .
1	I	320	 6% 92% 5% .
1	J	320	 7% 90% 8% .
1	K	320	 5% 92% 5% .
1	L	320	 2% 92% 5% ..
1	M	320	 3% 92% 5% .
1	N	320	 3% 90% 7% .
1	O	320	 5% 90% 7% ..
1	P	320	 19% 92% 5% .

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	CIT	B	401	-	X	-	-
2	CIT	D	401	-	X	-	-
2	CIT	E	401	-	X	-	-
2	CIT	F	401	-	X	-	-
2	CIT	H	401	-	X	-	-
2	CIT	J	401	-	X	X	-
2	CIT	L	401	-	-	X	-
2	CIT	M	401	-	X	-	-
2	CIT	N	401	-	X	-	-
2	CIT	O	401	-	X	-	-

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 38293 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called Malate dehydrogenase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	313	2383	1514	403	450	16	0	0	0
1	B	313	2383	1514	403	450	16	0	0	0
1	C	313	2383	1514	403	450	16	0	0	0
1	D	313	2383	1514	403	450	16	0	0	0
1	E	313	2383	1514	403	450	16	0	0	0
1	F	313	2383	1514	403	450	16	0	0	0
1	G	309	2353	1496	398	444	15	0	0	0
1	H	313	2383	1514	403	450	16	0	0	0
1	I	313	2383	1514	403	450	16	0	0	0
1	J	313	2383	1514	403	450	16	0	0	0
1	K	313	2383	1514	403	450	16	0	0	0
1	L	313	2383	1514	403	450	16	0	0	0
1	M	313	2383	1514	403	450	16	0	0	0
1	N	313	2383	1514	403	450	16	0	0	0
1	O	313	2383	1514	403	450	16	0	0	0
1	P	313	2383	1514	403	450	16	0	0	0

There are 112 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	314	GLY	-	expression tag	UNP C6KT25
A	315	HIS	-	expression tag	UNP C6KT25
A	316	HIS	-	expression tag	UNP C6KT25
A	317	HIS	-	expression tag	UNP C6KT25
A	318	HIS	-	expression tag	UNP C6KT25
A	319	HIS	-	expression tag	UNP C6KT25
A	320	HIS	-	expression tag	UNP C6KT25
B	314	GLY	-	expression tag	UNP C6KT25
B	315	HIS	-	expression tag	UNP C6KT25
B	316	HIS	-	expression tag	UNP C6KT25
B	317	HIS	-	expression tag	UNP C6KT25
B	318	HIS	-	expression tag	UNP C6KT25
B	319	HIS	-	expression tag	UNP C6KT25
B	320	HIS	-	expression tag	UNP C6KT25
C	314	GLY	-	expression tag	UNP C6KT25
C	315	HIS	-	expression tag	UNP C6KT25
C	316	HIS	-	expression tag	UNP C6KT25
C	317	HIS	-	expression tag	UNP C6KT25
C	318	HIS	-	expression tag	UNP C6KT25
C	319	HIS	-	expression tag	UNP C6KT25
C	320	HIS	-	expression tag	UNP C6KT25
D	314	GLY	-	expression tag	UNP C6KT25
D	315	HIS	-	expression tag	UNP C6KT25
D	316	HIS	-	expression tag	UNP C6KT25
D	317	HIS	-	expression tag	UNP C6KT25
D	318	HIS	-	expression tag	UNP C6KT25
D	319	HIS	-	expression tag	UNP C6KT25
D	320	HIS	-	expression tag	UNP C6KT25
E	314	GLY	-	expression tag	UNP C6KT25
E	315	HIS	-	expression tag	UNP C6KT25
E	316	HIS	-	expression tag	UNP C6KT25
E	317	HIS	-	expression tag	UNP C6KT25
E	318	HIS	-	expression tag	UNP C6KT25
E	319	HIS	-	expression tag	UNP C6KT25
E	320	HIS	-	expression tag	UNP C6KT25
F	314	GLY	-	expression tag	UNP C6KT25
F	315	HIS	-	expression tag	UNP C6KT25
F	316	HIS	-	expression tag	UNP C6KT25
F	317	HIS	-	expression tag	UNP C6KT25
F	318	HIS	-	expression tag	UNP C6KT25
F	319	HIS	-	expression tag	UNP C6KT25
F	320	HIS	-	expression tag	UNP C6KT25

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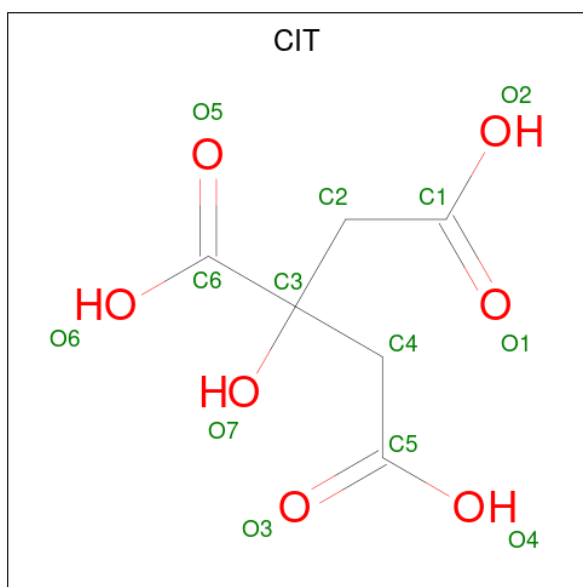
Chain	Residue	Modelled	Actual	Comment	Reference
G	314	GLY	-	expression tag	UNP C6KT25
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G	316	HIS	-	expression tag	UNP C6KT25
G	317	HIS	-	expression tag	UNP C6KT25
G	318	HIS	-	expression tag	UNP C6KT25
G	319	HIS	-	expression tag	UNP C6KT25
G	320	HIS	-	expression tag	UNP C6KT25
H	314	GLY	-	expression tag	UNP C6KT25
H	315	HIS	-	expression tag	UNP C6KT25
H	316	HIS	-	expression tag	UNP C6KT25
H	317	HIS	-	expression tag	UNP C6KT25
H	318	HIS	-	expression tag	UNP C6KT25
H	319	HIS	-	expression tag	UNP C6KT25
H	320	HIS	-	expression tag	UNP C6KT25
I	314	GLY	-	expression tag	UNP C6KT25
I	315	HIS	-	expression tag	UNP C6KT25
I	316	HIS	-	expression tag	UNP C6KT25
I	317	HIS	-	expression tag	UNP C6KT25
I	318	HIS	-	expression tag	UNP C6KT25
I	319	HIS	-	expression tag	UNP C6KT25
I	320	HIS	-	expression tag	UNP C6KT25
J	314	GLY	-	expression tag	UNP C6KT25
J	315	HIS	-	expression tag	UNP C6KT25
J	316	HIS	-	expression tag	UNP C6KT25
J	317	HIS	-	expression tag	UNP C6KT25
J	318	HIS	-	expression tag	UNP C6KT25
J	319	HIS	-	expression tag	UNP C6KT25
J	320	HIS	-	expression tag	UNP C6KT25
K	314	GLY	-	expression tag	UNP C6KT25
K	315	HIS	-	expression tag	UNP C6KT25
K	316	HIS	-	expression tag	UNP C6KT25
K	317	HIS	-	expression tag	UNP C6KT25
K	318	HIS	-	expression tag	UNP C6KT25
K	319	HIS	-	expression tag	UNP C6KT25
K	320	HIS	-	expression tag	UNP C6KT25
L	314	GLY	-	expression tag	UNP C6KT25
L	315	HIS	-	expression tag	UNP C6KT25
L	316	HIS	-	expression tag	UNP C6KT25
L	317	HIS	-	expression tag	UNP C6KT25
L	318	HIS	-	expression tag	UNP C6KT25
L	319	HIS	-	expression tag	UNP C6KT25
L	320	HIS	-	expression tag	UNP C6KT25

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Chain	Residue	Modelled	Actual	Comment	Reference
M	314	GLY	-	expression tag	UNP C6KT25
M	315	HIS	-	expression tag	UNP C6KT25
M	316	HIS	-	expression tag	UNP C6KT25
M	317	HIS	-	expression tag	UNP C6KT25
M	318	HIS	-	expression tag	UNP C6KT25
M	319	HIS	-	expression tag	UNP C6KT25
M	320	HIS	-	expression tag	UNP C6KT25
N	314	GLY	-	expression tag	UNP C6KT25
N	315	HIS	-	expression tag	UNP C6KT25
N	316	HIS	-	expression tag	UNP C6KT25
N	317	HIS	-	expression tag	UNP C6KT25
N	318	HIS	-	expression tag	UNP C6KT25
N	319	HIS	-	expression tag	UNP C6KT25
N	320	HIS	-	expression tag	UNP C6KT25
O	314	GLY	-	expression tag	UNP C6KT25
O	315	HIS	-	expression tag	UNP C6KT25
O	316	HIS	-	expression tag	UNP C6KT25
O	317	HIS	-	expression tag	UNP C6KT25
O	318	HIS	-	expression tag	UNP C6KT25
O	319	HIS	-	expression tag	UNP C6KT25
O	320	HIS	-	expression tag	UNP C6KT25
P	314	GLY	-	expression tag	UNP C6KT25
P	315	HIS	-	expression tag	UNP C6KT25
P	316	HIS	-	expression tag	UNP C6KT25
P	317	HIS	-	expression tag	UNP C6KT25
P	318	HIS	-	expression tag	UNP C6KT25
P	319	HIS	-	expression tag	UNP C6KT25
P	320	HIS	-	expression tag	UNP C6KT25

- Molecule 2 is CITRIC ACID (three-letter code: CIT) (formula: C₆H₈O₇).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total C O 13 6 7	0	0
2	B	1	Total C O 13 6 7	0	0
2	C	1	Total C O 13 6 7	0	0
2	D	1	Total C O 13 6 7	0	0
2	E	1	Total C O 13 6 7	0	0
2	F	1	Total C O 13 6 7	0	0
2	H	1	Total C O 13 6 7	0	0
2	I	1	Total C O 13 6 7	0	0
2	J	1	Total C O 13 6 7	0	0
2	K	1	Total C O 13 6 7	0	0
2	L	1	Total C O 13 6 7	0	0
2	M	1	Total C O 13 6 7	0	0
2	N	1	Total C O 13 6 7	0	0
2	O	1	Total C O 13 6 7	0	0

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	C	O		
2	P	1	13	6	7	0	0

3 Residue-property plots [i](#)


These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ($RSRZ > 2$). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

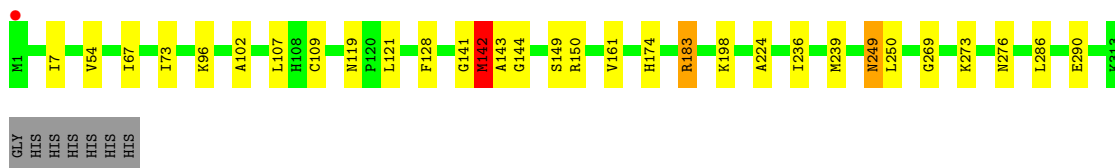
- Molecule 1: Malate dehydrogenase

Chain A:  91% 5% ..

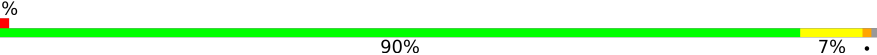


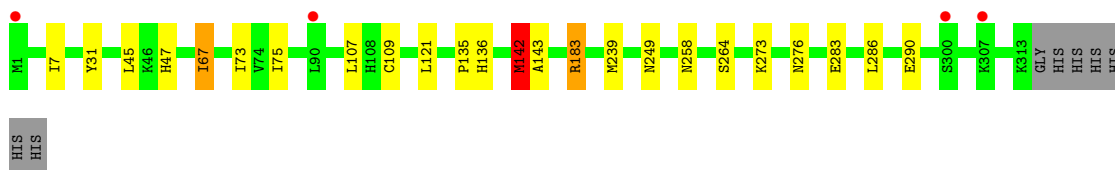
- Molecule 1: Malate dehydrogenase

Chain B:  88% 9% ..



- Molecule 1: Malate dehydrogenase

Chain C:  90% 7% ..




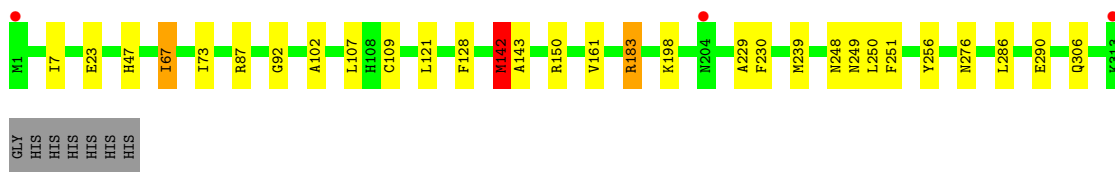
- Molecule 1: Malate dehydrogenase

Chain D:  90% 7% ..

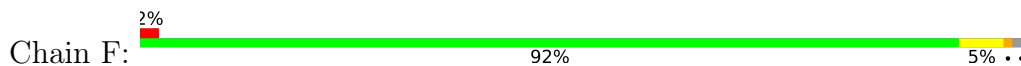


- Molecule 1: Malate dehydrogenase

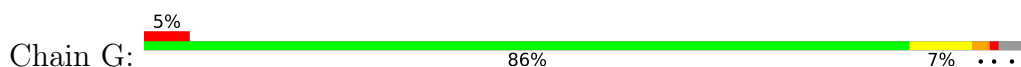
Chain E:  88% 8% ..



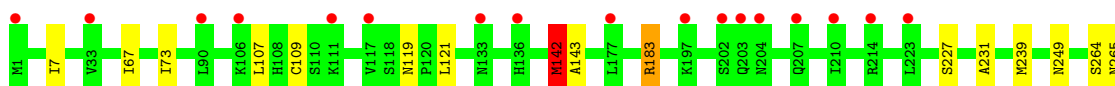
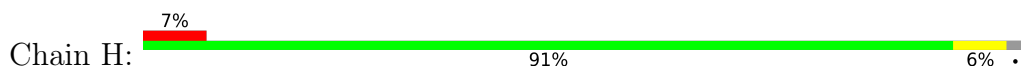
● Molecule 1: Malate dehydrogenase



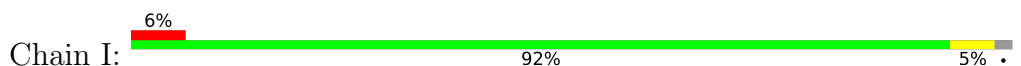
● Molecule 1: Malate dehydrogenase



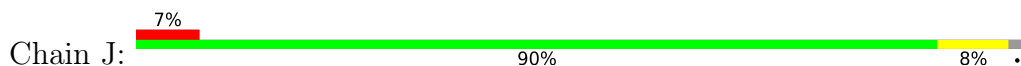
● Molecule 1: Malate dehydrogenase

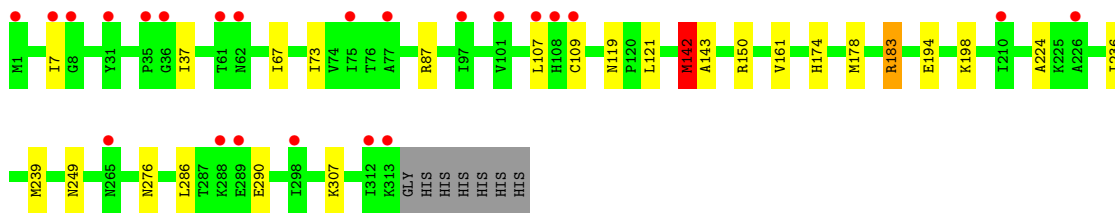


● Molecule 1: Malate dehydrogenase

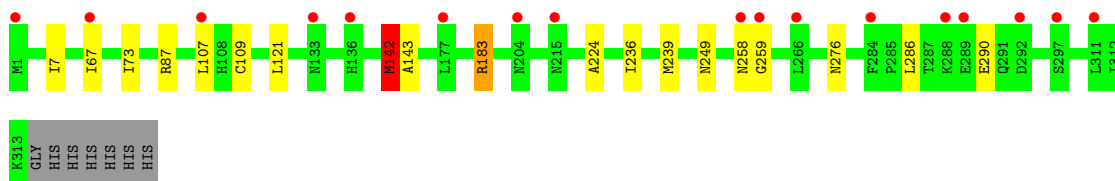


● Molecule 1: Malate dehydrogenase

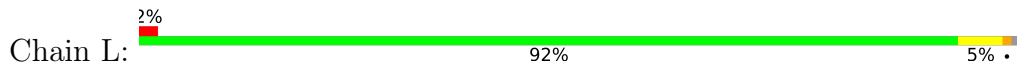




• Molecule 1: Malate dehydrogenase



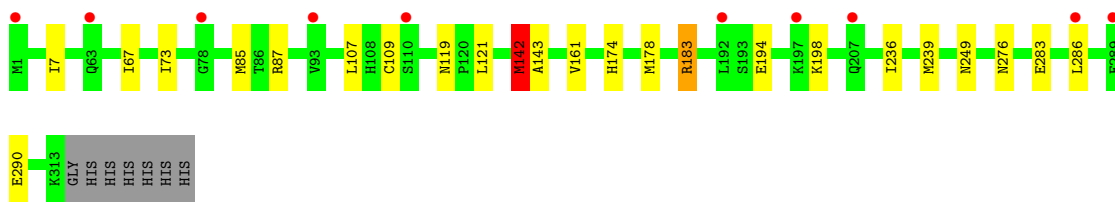
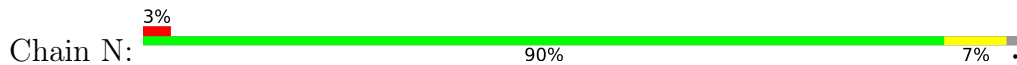
• Molecule 1: Malate dehydrogenase



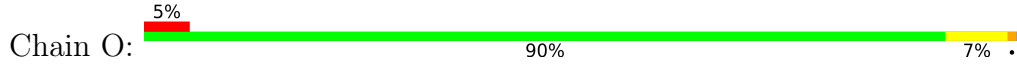
• Molecule 1: Malate dehydrogenase



• Molecule 1: Malate dehydrogenase

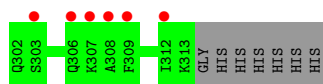
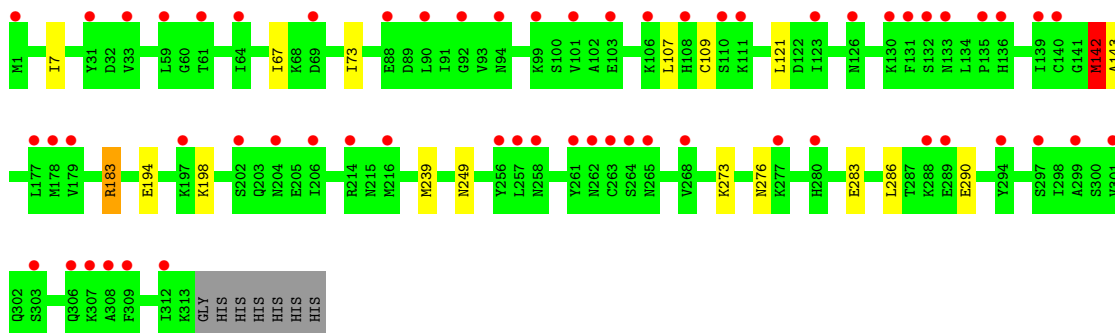
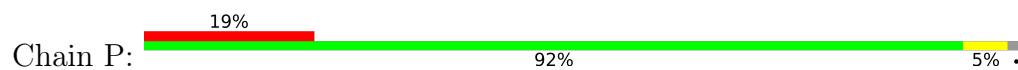


• Molecule 1: Malate dehydrogenase





- Molecule 1: Malate dehydrogenase



4 Data and refinement statistics

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α , β , γ	72.02Å 152.69Å 158.39Å 103.77° 101.46° 94.93°	Depositor
Resolution (Å)	47.60 – 2.40 47.59 – 2.40	Depositor EDS
% Data completeness (in resolution range)	97.6 (47.60-2.40) 97.6 (47.59-2.40)	Depositor EDS
R_{merge}	0.05	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.21 (at 2.39Å)	Xtrriage
Refinement program	REFMAC 5.8.0124	Depositor
R, R_{free}	0.248 , 0.264 0.269 , 0.281	Depositor DCC
R_{free} test set	12225 reflections (5.04%)	wwPDB-VP
Wilson B-factor (Å ²)	42.5	Xtrriage
Anisotropy	0.542	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 26.6	EDS
L-test for twinning ²	$\langle L \rangle = 0.40$, $\langle L^2 \rangle = 0.22$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.90	EDS
Total number of atoms	38293	wwPDB-VP
Average B, all atoms (Å ²)	23.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.00% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality i

5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: CIT

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	1.02	3/2416 (0.1%)	0.90	6/3263 (0.2%)
1	B	1.28	8/2416 (0.3%)	0.91	4/3263 (0.1%)
1	C	1.00	1/2416 (0.0%)	0.85	3/3263 (0.1%)
1	D	1.08	2/2416 (0.1%)	0.86	5/3263 (0.2%)
1	E	1.15	7/2416 (0.3%)	0.90	3/3263 (0.1%)
1	F	0.95	2/2416 (0.1%)	0.84	5/3263 (0.2%)
1	G	1.11	3/2385 (0.1%)	1.03	12/3222 (0.4%)
1	H	0.79	0/2416	0.79	3/3263 (0.1%)
1	I	0.81	0/2416	0.79	3/3263 (0.1%)
1	J	0.85	0/2416	0.81	4/3263 (0.1%)
1	K	0.72	0/2416	0.77	2/3263 (0.1%)
1	L	0.95	0/2416	0.84	3/3263 (0.1%)
1	M	0.85	1/2416 (0.0%)	0.80	2/3263 (0.1%)
1	N	0.83	0/2416	0.81	5/3263 (0.2%)
1	O	0.89	2/2416 (0.1%)	0.85	3/3263 (0.1%)
1	P	0.65	0/2416	0.76	2/3263 (0.1%)
All	All	0.95	29/38625 (0.1%)	0.85	65/52167 (0.1%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	D	0	1
1	E	0	1
All	All	0	2

All (29) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	F	83	GLU	CD-OE2	-9.08	1.15	1.25
1	A	83	GLU	CD-OE2	-8.80	1.16	1.25
1	O	312	ILE	CA-C	8.17	1.74	1.52
1	E	256	TYR	CG-CD1	8.17	1.49	1.39
1	B	269	GLY	N-CA	-7.33	1.35	1.46
1	C	75	ILE	N-CA	6.83	1.60	1.46
1	A	83	GLU	CD-OE1	-6.59	1.18	1.25
1	B	144	GLY	CA-C	6.40	1.62	1.51
1	G	88	GLU	CG-CD	6.29	1.61	1.51
1	F	83	GLU	CD-OE1	-6.20	1.18	1.25
1	O	312	ILE	C-O	6.19	1.35	1.23
1	E	250	LEU	N-CA	-6.09	1.34	1.46
1	B	141	GLY	N-CA	-5.64	1.37	1.46
1	B	149	SER	CB-OG	-5.54	1.35	1.42
1	E	23	GLU	CD-OE2	5.53	1.31	1.25
1	B	250	LEU	N-CA	-5.45	1.35	1.46
1	E	229	ALA	CA-C	5.44	1.67	1.52
1	D	243	TYR	CE1-CZ	-5.43	1.31	1.38
1	E	183	ARG	CZ-NH1	-5.36	1.26	1.33
1	E	230	PHE	N-CA	5.33	1.57	1.46
1	B	273	LYS	C-O	-5.20	1.13	1.23
1	A	23	GLU	CD-OE2	5.18	1.31	1.25
1	G	86	THR	C-O	-5.16	1.13	1.23
1	D	230	PHE	CE1-CZ	5.10	1.47	1.37
1	B	249	ASN	CG-OD1	5.07	1.35	1.24
1	G	88	GLU	CD-OE2	5.04	1.31	1.25
1	B	54	VAL	CA-CB	-5.02	1.44	1.54
1	E	92	GLY	N-CA	-5.01	1.38	1.46
1	M	256	TYR	CG-CD1	5.01	1.45	1.39

All (65) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	G	89	ASP	CB-CG-OD2	-13.10	106.51	118.30
1	G	89	ASP	CB-CG-OD1	13.07	130.06	118.30
1	G	88	GLU	CA-CB-CG	11.04	137.68	113.40
1	A	107	LEU	CA-CB-CG	9.64	137.46	115.30
1	G	90	LEU	CB-CG-CD2	-8.57	96.43	111.00
1	E	183	ARG	NE-CZ-NH1	8.51	124.56	120.30
1	G	183	ARG	NE-CZ-NH1	7.34	123.97	120.30
1	H	142	MET	CG-SD-CE	-7.17	88.73	100.20
1	B	183	ARG	NE-CZ-NH1	7.16	123.88	120.30
1	G	91	ILE	CB-CA-C	7.11	125.82	111.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	183	ARG	NE-CZ-NH1	7.08	123.84	120.30
1	O	142	MET	CG-SD-CE	-7.03	88.95	100.20
1	N	142	MET	CG-SD-CE	-7.03	88.96	100.20
1	C	142	MET	CG-SD-CE	-6.96	89.06	100.20
1	A	83	GLU	OE1-CD-OE2	-6.90	115.02	123.30
1	E	142	MET	CA-CB-CG	6.78	124.82	113.30
1	J	142	MET	CG-SD-CE	-6.68	89.51	100.20
1	A	107	LEU	CB-CG-CD2	6.66	122.32	111.00
1	B	142	MET	CG-SD-CE	-6.61	89.62	100.20
1	O	312	ILE	O-C-N	-6.51	112.28	122.70
1	O	183	ARG	NE-CZ-NH1	6.50	123.55	120.30
1	J	183	ARG	NE-CZ-NH1	6.48	123.54	120.30
1	K	142	MET	CG-SD-CE	-6.43	89.91	100.20
1	E	142	MET	CG-SD-CE	-6.42	89.93	100.20
1	G	150	ARG	NE-CZ-NH1	6.36	123.48	120.30
1	C	183	ARG	NE-CZ-NH1	6.31	123.46	120.30
1	I	142	MET	CG-SD-CE	-6.30	90.12	100.20
1	P	183	ARG	NE-CZ-NH1	6.26	123.43	120.30
1	A	142	MET	CA-CB-CG	6.24	123.91	113.30
1	L	183	ARG	NE-CZ-NH1	6.13	123.37	120.30
1	N	183	ARG	NE-CZ-NH1	6.13	123.36	120.30
1	A	183	ARG	NE-CZ-NH1	6.07	123.34	120.30
1	P	142	MET	CG-SD-CE	-6.02	90.56	100.20
1	H	183	ARG	NE-CZ-NH1	5.94	123.27	120.30
1	G	142	MET	CA-CB-CG	5.93	123.38	113.30
1	G	142	MET	CG-SD-CE	-5.92	90.72	100.20
1	M	142	MET	CG-SD-CE	-5.92	90.73	100.20
1	G	91	ILE	N-CA-C	-5.91	95.04	111.00
1	D	142	MET	CA-CB-CG	5.88	123.30	113.30
1	A	142	MET	CG-SD-CE	-5.82	90.89	100.20
1	L	142	MET	CG-SD-CE	-5.77	90.96	100.20
1	N	276	ASN	CB-CA-C	-5.77	98.85	110.40
1	F	142	MET	CG-SD-CE	-5.65	91.16	100.20
1	M	142	MET	CA-CB-CG	5.65	122.91	113.30
1	D	183	ARG	NE-CZ-NH2	-5.59	117.50	120.30
1	N	142	MET	CA-CB-CG	5.57	122.76	113.30
1	D	142	MET	CG-SD-CE	-5.54	91.34	100.20
1	D	178	MET	CB-CA-C	-5.52	99.36	110.40
1	B	142	MET	CA-CB-CG	5.45	122.57	113.30
1	L	178	MET	CB-CA-C	-5.45	99.50	110.40
1	F	276	ASN	CB-CA-C	-5.42	99.57	110.40
1	F	83	GLU	OE1-CD-OE2	-5.38	116.84	123.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	F	183	ARG	NE-CZ-NH1	5.30	122.95	120.30
1	B	276	ASN	CB-CA-C	-5.24	99.92	110.40
1	G	81	ARG	NE-CZ-NH1	5.23	122.92	120.30
1	I	178	MET	CB-CA-C	-5.22	99.96	110.40
1	N	178	MET	CB-CA-C	-5.19	100.02	110.40
1	H	142	MET	CA-CB-CG	5.15	122.05	113.30
1	G	276	ASN	CB-CA-C	-5.14	100.12	110.40
1	J	276	ASN	CB-CA-C	-5.11	100.18	110.40
1	I	142	MET	CA-CB-CG	5.10	121.97	113.30
1	K	183	ARG	NE-CZ-NH1	5.06	122.83	120.30
1	J	178	MET	CB-CA-C	-5.03	100.35	110.40
1	C	45	LEU	CB-CG-CD2	5.01	119.51	111.00
1	F	311	LEU	CA-CB-CG	5.01	126.82	115.30

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	D	312	ILE	Mainchain
1	E	251	PHE	Peptide

5.2 Too-close contacts [i](#)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2383	0	2463	12	1
1	B	2383	0	2463	17	0
1	C	2383	0	2463	23	0
1	D	2383	0	2463	13	0
1	E	2383	0	2463	14	0
1	F	2383	0	2463	14	0
1	G	2353	0	2431	28	0
1	H	2383	0	2463	18	0
1	I	2383	0	2463	11	0
1	J	2383	0	2463	21	0
1	K	2383	0	2463	17	0
1	L	2383	0	2463	20	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	M	2383	0	2463	9	1
1	N	2383	0	2463	21	0
1	O	2383	0	2463	24	0
1	P	2383	0	2463	13	0
2	A	13	0	5	1	0
2	B	13	0	5	3	0
2	C	13	0	5	0	0
2	D	13	0	5	1	0
2	E	13	0	5	1	0
2	F	13	0	5	1	0
2	H	13	0	5	2	0
2	I	13	0	5	2	0
2	J	13	0	5	6	0
2	K	13	0	5	1	0
2	L	13	0	5	7	0
2	M	13	0	5	0	0
2	N	13	0	5	5	0
2	O	13	0	5	1	0
2	P	13	0	5	0	0
All	All	38293	0	39451	225	1

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 3.

All (225) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:146:LEU:HG	1:G:150:ARG:HH11	1.01	1.08
1:G:146:LEU:HG	1:G:150:ARG:NH1	1.69	1.06
1:G:146:LEU:CG	1:G:150:ARG:NH1	2.20	1.03
1:G:146:LEU:HD21	1:G:150:ARG:HH12	1.26	1.00
1:G:146:LEU:CG	1:G:150:ARG:HH11	1.79	0.95
1:N:174:HIS:NE2	2:N:401:CIT:O5	2.01	0.93
1:G:146:LEU:CD2	1:G:150:ARG:HH12	1.85	0.90
1:H:265:ASN:ND2	1:K:259:GLY:HA3	1.90	0.86
1:G:80:GLN:O	1:G:81:ARG:HB2	1.78	0.83
1:J:121:LEU:HD22	1:J:143:ALA:HB2	1.62	0.82
1:O:121:LEU:HD22	1:O:143:ALA:HB2	1.62	0.82
1:C:121:LEU:HD22	1:C:143:ALA:HB2	1.62	0.81
1:P:121:LEU:HD22	1:P:143:ALA:HB2	1.62	0.81
1:B:121:LEU:HD22	1:B:143:ALA:HB2	1.63	0.81

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:N:121:LEU:HD22	1:N:143:ALA:HB2	1.63	0.80
1:K:121:LEU:HD22	1:K:143:ALA:HB2	1.63	0.80
1:E:121:LEU:HD22	1:E:143:ALA:HB2	1.63	0.80
1:H:121:LEU:HD22	1:H:143:ALA:HB2	1.64	0.80
1:M:121:LEU:HD22	1:M:143:ALA:HB2	1.64	0.79
1:H:265:ASN:HD21	1:K:259:GLY:HA3	1.45	0.79
1:L:121:LEU:HD22	1:L:143:ALA:HB2	1.64	0.79
1:D:121:LEU:HD22	1:D:143:ALA:HB2	1.64	0.79
1:A:121:LEU:HD22	1:A:143:ALA:HB2	1.65	0.79
1:I:121:LEU:HD22	1:I:143:ALA:HB2	1.63	0.78
1:F:121:LEU:HD22	1:F:143:ALA:HB2	1.65	0.78
1:G:121:LEU:HD22	1:G:143:ALA:HB2	1.64	0.77
1:C:135:PRO:HA	1:O:258:ASN:ND2	1.99	0.77
1:H:265:ASN:HB3	1:K:258:ASN:OD1	1.85	0.77
1:H:264:SER:O	1:K:258:ASN:OD1	2.02	0.76
1:D:106:LYS:HE3	1:D:133:ASN:HD22	1.49	0.76
1:G:146:LEU:CD2	1:G:150:ARG:NH1	2.48	0.76
1:B:119:ASN:HD21	2:B:401:CIT:H41	1.53	0.73
1:N:87:ARG:HH12	2:N:401:CIT:C6	2.01	0.73
1:F:142:MET:HB2	1:F:239:MET:SD	2.29	0.73
1:J:87:ARG:NH1	2:J:401:CIT:O2	2.22	0.72
1:O:227:SER:HB2	2:O:401:CIT:H21	1.72	0.72
1:L:142:MET:HB2	1:L:239:MET:SD	2.30	0.71
1:J:142:MET:HB2	1:J:239:MET:SD	2.31	0.71
1:E:142:MET:HB2	1:E:239:MET:SD	2.31	0.71
1:M:142:MET:HB2	1:M:239:MET:SD	2.31	0.71
1:J:119:ASN:ND2	2:J:401:CIT:O3	2.25	0.70
1:D:142:MET:HB2	1:D:239:MET:SD	2.32	0.70
1:I:142:MET:HB2	1:I:239:MET:SD	2.32	0.70
1:N:142:MET:HB2	1:N:239:MET:SD	2.32	0.70
1:H:265:ASN:CG	1:K:259:GLY:HA3	2.00	0.70
1:K:142:MET:HB2	1:K:239:MET:SD	2.32	0.70
1:P:142:MET:HB2	1:P:239:MET:SD	2.31	0.70
1:L:87:ARG:NH1	2:L:401:CIT:H22	2.08	0.69
1:G:87:ARG:O	1:G:91:ILE:HG23	1.92	0.69
1:B:142:MET:HB2	1:B:239:MET:SD	2.32	0.68
1:O:142:MET:HB2	1:O:239:MET:SD	2.34	0.68
1:G:146:LEU:CD1	1:G:150:ARG:NH1	2.57	0.68
1:A:142:MET:HB2	1:A:239:MET:SD	2.34	0.67
1:L:119:ASN:HD21	2:L:401:CIT:H21	1.60	0.67
1:C:142:MET:HB2	1:C:239:MET:SD	2.35	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:119:ASN:ND2	2:I:401:CIT:O3	2.28	0.66
1:H:142:MET:HB2	1:H:239:MET:SD	2.36	0.65
1:G:142:MET:HB2	1:G:239:MET:SD	2.36	0.65
1:L:87:ARG:HH12	2:L:401:CIT:H22	1.62	0.65
1:N:198:LYS:CE	1:P:283:GLU:O	2.46	0.64
1:J:307:LYS:HE2	1:N:85:MET:HG2	1.78	0.64
1:F:7:ILE:HD11	1:F:67:ILE:CD1	2.29	0.62
1:B:7:ILE:HD11	1:B:67:ILE:CD1	2.30	0.62
1:G:7:ILE:HD11	1:G:67:ILE:CD1	2.29	0.62
1:B:174:HIS:NE2	2:B:401:CIT:H42	2.15	0.62
1:E:7:ILE:HD11	1:E:67:ILE:CD1	2.29	0.62
1:P:7:ILE:HD11	1:P:67:ILE:CD1	2.30	0.62
1:A:7:ILE:HD11	1:A:67:ILE:CD1	2.30	0.61
1:C:258:ASN:ND2	1:O:135:PRO:HA	2.15	0.61
1:K:7:ILE:HD11	1:K:67:ILE:CD1	2.31	0.61
1:C:7:ILE:HD11	1:C:67:ILE:CD1	2.31	0.61
1:G:146:LEU:HD11	1:G:150:ARG:NH1	2.16	0.61
1:H:7:ILE:HD11	1:H:67:ILE:CD1	2.30	0.60
1:M:7:ILE:HD11	1:M:67:ILE:CD1	2.31	0.60
1:J:7:ILE:HD11	1:J:67:ILE:CD1	2.31	0.60
1:N:87:ARG:NH1	2:N:401:CIT:O5	2.31	0.60
1:L:7:ILE:HD11	1:L:67:ILE:CD1	2.31	0.59
1:I:7:ILE:HD11	1:I:67:ILE:CD1	2.31	0.59
1:A:7:ILE:HD11	1:A:67:ILE:HD12	1.84	0.59
1:H:265:ASN:HB3	1:K:258:ASN:CG	2.23	0.59
1:L:7:ILE:HD11	1:L:67:ILE:HD12	1.84	0.59
1:B:73:ILE:HD11	1:B:109:CYS:SG	2.43	0.59
1:L:73:ILE:HD11	1:L:109:CYS:SG	2.44	0.58
1:G:73:ILE:HD11	1:G:109:CYS:SG	2.42	0.58
1:K:73:ILE:HD11	1:K:109:CYS:SG	2.43	0.58
1:O:7:ILE:HD11	1:O:67:ILE:CD1	2.32	0.58
1:C:264:SER:HB3	1:O:133:ASN:HA	1.84	0.58
1:P:73:ILE:HD11	1:P:109:CYS:SG	2.43	0.58
1:H:73:ILE:HD11	1:H:109:CYS:SG	2.43	0.58
1:E:7:ILE:HD11	1:E:67:ILE:HD12	1.85	0.58
1:H:7:ILE:HD11	1:H:67:ILE:HD12	1.85	0.58
1:M:73:ILE:HD11	1:M:109:CYS:SG	2.44	0.58
1:F:73:ILE:HD11	1:F:109:CYS:SG	2.44	0.58
1:M:7:ILE:HD11	1:M:67:ILE:HD12	1.86	0.58
1:P:7:ILE:HD11	1:P:67:ILE:HD12	1.86	0.58
1:J:73:ILE:HD11	1:J:109:CYS:SG	2.44	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:7:ILE:HD11	1:C:67:ILE:HD12	1.85	0.57
1:J:7:ILE:HD11	1:J:67:ILE:HD12	1.86	0.57
1:N:7:ILE:HD11	1:N:67:ILE:CD1	2.34	0.57
1:I:73:ILE:HD11	1:I:109:CYS:SG	2.44	0.57
1:K:7:ILE:HD11	1:K:67:ILE:HD12	1.86	0.57
1:G:7:ILE:HD11	1:G:67:ILE:HD12	1.86	0.57
1:O:73:ILE:HD11	1:O:109:CYS:SG	2.45	0.57
1:D:7:ILE:HD11	1:D:67:ILE:CD1	2.34	0.57
1:E:73:ILE:HD11	1:E:109:CYS:SG	2.45	0.57
1:A:73:ILE:HD11	1:A:109:CYS:SG	2.45	0.57
1:I:7:ILE:HD11	1:I:67:ILE:HD12	1.86	0.57
1:M:161:VAL:HG12	1:O:273:LYS:HE2	1.85	0.56
1:C:73:ILE:HD11	1:C:109:CYS:SG	2.44	0.56
1:D:73:ILE:HD11	1:D:109:CYS:SG	2.45	0.56
1:B:7:ILE:HD11	1:B:67:ILE:HD12	1.87	0.56
1:F:161:VAL:HG12	1:H:273:LYS:HE2	1.85	0.56
1:D:119:ASN:HD21	2:D:401:CIT:H41	1.70	0.56
1:C:136:HIS:NE2	1:O:136:HIS:NE2	2.53	0.56
1:J:198:LYS:CE	1:L:283:GLU:O	2.54	0.56
1:F:7:ILE:HD11	1:F:67:ILE:HD12	1.88	0.56
1:N:7:ILE:HD11	1:N:67:ILE:HD12	1.87	0.55
1:N:73:ILE:HD11	1:N:109:CYS:SG	2.45	0.55
1:C:136:HIS:CE1	1:O:136:HIS:HE2	2.25	0.55
1:O:7:ILE:HD11	1:O:67:ILE:HD12	1.88	0.55
1:N:194:GLU:OE1	1:P:183:ARG:NH2	2.39	0.55
1:N:198:LYS:HE3	1:P:283:GLU:O	2.06	0.54
1:B:119:ASN:HD21	2:B:401:CIT:C4	2.21	0.54
1:C:258:ASN:HD21	1:O:136:HIS:H	1.55	0.54
1:A:161:VAL:HG12	1:C:273:LYS:HE2	1.89	0.53
1:C:135:PRO:HA	1:O:258:ASN:HD21	1.69	0.53
1:C:136:HIS:H	1:O:258:ASN:HD21	1.56	0.53
1:E:161:VAL:HG12	1:G:273:LYS:HE2	1.91	0.53
1:J:198:LYS:HE3	1:L:283:GLU:O	2.09	0.53
1:F:198:LYS:CE	1:H:283:GLU:O	2.57	0.53
1:G:80:GLN:O	1:G:81:ARG:CB	2.51	0.52
1:K:87:ARG:NH1	2:K:401:CIT:H22	2.24	0.52
1:A:198:LYS:HE3	1:C:283:GLU:O	2.10	0.51
1:D:7:ILE:HD11	1:D:67:ILE:HD12	1.90	0.51
1:L:119:ASN:ND2	2:L:401:CIT:H21	2.24	0.50
1:J:161:VAL:HG12	1:L:273:LYS:HE2	1.94	0.49
1:G:89:ASP:O	1:G:93:VAL:HG12	2.12	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:198:LYS:HE3	1:G:283:GLU:O	2.12	0.49
1:N:283:GLU:O	1:P:198:LYS:CE	2.62	0.48
1:J:87:ARG:NH1	2:J:401:CIT:O5	2.41	0.48
1:J:119:ASN:HD21	2:J:401:CIT:C5	2.27	0.48
1:B:198:LYS:CE	1:D:283:GLU:O	2.62	0.47
1:N:119:ASN:HD21	2:N:401:CIT:H22	1.78	0.47
1:D:183:ARG:HD3	1:D:290:GLU:OE2	2.13	0.47
1:N:183:ARG:NH2	1:P:194:GLU:OE1	2.47	0.47
1:J:194:GLU:OE1	1:L:183:ARG:NH2	2.48	0.47
1:M:183:ARG:HD3	1:M:290:GLU:OE2	2.14	0.47
1:E:183:ARG:HD3	1:E:290:GLU:OE2	2.15	0.47
1:G:89:ASP:O	1:G:90:LEU:C	2.50	0.47
1:J:174:HIS:NE2	2:J:401:CIT:O5	2.48	0.46
1:I:183:ARG:HD3	1:I:290:GLU:OE2	2.16	0.46
1:N:119:ASN:ND2	2:N:401:CIT:H22	2.31	0.46
1:E:248:ASN:ND2	1:G:160:LYS:O	2.49	0.46
2:F:401:CIT:O3	2:F:401:CIT:O7	2.29	0.46
1:K:183:ARG:HD3	1:K:290:GLU:OE2	2.15	0.46
1:N:183:ARG:HD3	1:N:290:GLU:OE2	2.16	0.46
1:B:121:LEU:HD22	1:B:143:ALA:CB	2.40	0.46
1:P:183:ARG:HD3	1:P:290:GLU:OE2	2.15	0.46
1:C:183:ARG:HD3	1:C:290:GLU:OE2	2.16	0.45
1:A:47:HIS:CE1	1:B:150:ARG:HG2	2.51	0.45
1:L:183:ARG:HD3	1:L:290:GLU:OE2	2.16	0.45
1:J:183:ARG:HD3	1:J:290:GLU:OE2	2.16	0.45
1:L:87:ARG:HH12	2:L:401:CIT:C2	2.28	0.45
1:C:142:MET:SD	1:C:142:MET:C	2.96	0.45
1:A:183:ARG:HD3	1:A:290:GLU:OE2	2.16	0.45
1:G:150:ARG:HE	1:G:216:MET:CG	2.30	0.44
1:H:183:ARG:HD3	1:H:290:GLU:OE2	2.17	0.44
1:C:136:HIS:HE2	1:O:136:HIS:CE1	2.35	0.44
1:F:183:ARG:HD3	1:F:290:GLU:OE2	2.16	0.44
1:O:183:ARG:HD3	1:O:290:GLU:OE2	2.17	0.44
1:B:183:ARG:HD3	1:B:290:GLU:OE2	2.17	0.44
1:L:142:MET:CB	1:L:239:MET:SD	3.04	0.44
1:F:7:ILE:HD11	1:F:67:ILE:HD11	2.00	0.44
1:I:37:ILE:HA	1:J:224:ALA:HA	1.99	0.44
1:A:37:ILE:HA	1:B:224:ALA:HA	2.00	0.44
1:L:142:MET:SD	1:L:142:MET:C	2.96	0.43
1:I:142:MET:CB	1:I:239:MET:SD	3.06	0.43
1:I:224:ALA:HA	1:J:37:ILE:HA	2.01	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:198:LYS:CE	1:C:283:GLU:O	2.67	0.43
1:B:142:MET:HG2	1:B:236:ILE:HG13	2.01	0.43
1:G:183:ARG:HD3	1:G:290:GLU:OE2	2.18	0.43
1:P:142:MET:CB	1:P:239:MET:SD	3.05	0.43
1:N:142:MET:HG2	1:N:236:ILE:HG13	2.00	0.43
1:D:121:LEU:HD22	1:D:143:ALA:CB	2.43	0.43
1:E:102:ALA:HA	1:E:128:PHE:CE2	2.54	0.42
1:G:142:MET:HG2	1:G:236:ILE:HG13	2.01	0.42
1:I:119:ASN:HD21	2:I:401:CIT:C2	2.32	0.42
1:O:31:TYR:CD1	1:O:31:TYR:C	2.93	0.42
1:L:87:ARG:NH1	2:L:401:CIT:C2	2.80	0.42
1:A:119:ASN:HD21	2:A:401:CIT:H22	1.83	0.42
1:J:142:MET:HG2	1:J:236:ILE:HG13	2.02	0.42
1:K:142:MET:C	1:K:142:MET:SD	2.98	0.42
1:N:161:VAL:HG12	1:P:273:LYS:HE2	2.01	0.42
1:F:142:MET:CB	1:F:239:MET:SD	3.04	0.42
1:K:142:MET:CB	1:K:239:MET:SD	3.06	0.42
1:C:31:TYR:CD1	1:C:31:TYR:C	2.93	0.42
1:N:142:MET:SD	1:N:142:MET:C	2.98	0.42
1:G:47:HIS:HB2	1:H:231:ALA:HB2	2.02	0.42
1:F:198:LYS:HE3	1:H:283:GLU:O	2.19	0.42
1:H:119:ASN:HD21	2:H:401:CIT:H41	1.84	0.42
1:K:142:MET:HG2	1:K:236:ILE:HG13	2.02	0.42
1:E:47:HIS:CE1	1:F:150:ARG:HG2	2.54	0.41
1:J:142:MET:CB	1:J:239:MET:SD	3.05	0.41
1:O:142:MET:SD	1:O:142:MET:C	2.98	0.41
1:K:224:ALA:HA	1:L:37:ILE:HA	2.02	0.41
1:C:47:HIS:CE1	1:D:150:ARG:HG2	2.56	0.41
1:L:87:ARG:NH1	2:L:401:CIT:C1	2.84	0.41
1:F:142:MET:C	1:F:142:MET:SD	2.99	0.41
1:B:161:VAL:HG12	1:D:273:LYS:HE2	2.01	0.41
1:H:227:SER:HB2	2:H:401:CIT:H21	2.01	0.41
1:E:150:ARG:HG2	1:F:47:HIS:CE1	2.55	0.41
1:M:198:LYS:HE3	1:O:283:GLU:O	2.21	0.41
1:E:87:ARG:NH1	2:E:401:CIT:H22	2.36	0.41
1:J:150:ARG:NH1	2:J:401:CIT:O6	2.48	0.41
1:N:142:MET:CB	1:N:239:MET:SD	3.06	0.41
1:M:142:MET:SD	1:M:142:MET:C	2.99	0.41
1:E:198:LYS:CE	1:G:283:GLU:O	2.69	0.40
1:O:312:ILE:O	1:O:313:LYS:HG3	2.21	0.40
1:C:264:SER:N	1:O:133:ASN:OD1	2.54	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:7:ILE:HD11	1:B:67:ILE:HD11	2.03	0.40
1:B:102:ALA:HA	1:B:128:PHE:CE2	2.56	0.40
1:G:246:ASN:OD1	1:G:275:ASN:HB2	2.22	0.40
1:O:142:MET:HG2	1:O:236:ILE:HG13	2.03	0.40
1:C:258:ASN:HD21	1:O:136:HIS:N	2.20	0.40
1:D:31:TYR:CD1	1:D:31:TYR:C	2.95	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:289:GLU:OE2	1:M:289:GLU:OE2[1_655]	1.88	0.32

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	311/320 (97%)	300 (96%)	11 (4%)	0	100	100
1	B	311/320 (97%)	300 (96%)	11 (4%)	0	100	100
1	C	311/320 (97%)	302 (97%)	8 (3%)	1 (0%)	41	55
1	D	311/320 (97%)	303 (97%)	7 (2%)	1 (0%)	41	55
1	E	311/320 (97%)	302 (97%)	8 (3%)	1 (0%)	41	55
1	F	311/320 (97%)	303 (97%)	7 (2%)	1 (0%)	41	55
1	G	305/320 (95%)	297 (97%)	6 (2%)	2 (1%)	22	32
1	H	311/320 (97%)	303 (97%)	7 (2%)	1 (0%)	41	55
1	I	311/320 (97%)	300 (96%)	10 (3%)	1 (0%)	41	55
1	J	311/320 (97%)	302 (97%)	9 (3%)	0	100	100
1	K	311/320 (97%)	302 (97%)	8 (3%)	1 (0%)	41	55

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	L	311/320 (97%)	302 (97%)	7 (2%)	2 (1%)	25	36
1	M	311/320 (97%)	300 (96%)	11 (4%)	0	100	100
1	N	311/320 (97%)	300 (96%)	11 (4%)	0	100	100
1	O	311/320 (97%)	302 (97%)	8 (3%)	1 (0%)	41	55
1	P	311/320 (97%)	301 (97%)	9 (3%)	1 (0%)	41	55
All	All	4970/5120 (97%)	4819 (97%)	138 (3%)	13 (0%)	41	55

All (13) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	H	276	ASN
1	I	276	ASN
1	D	276	ASN
1	E	276	ASN
1	F	276	ASN
1	G	276	ASN
1	L	276	ASN
1	C	276	ASN
1	G	143	ALA
1	K	276	ASN
1	O	276	ASN
1	L	143	ALA
1	P	276	ASN

5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	265/271 (98%)	260 (98%)	5 (2%)	57	75
1	B	265/271 (98%)	260 (98%)	5 (2%)	57	75
1	C	265/271 (98%)	260 (98%)	5 (2%)	57	75
1	D	265/271 (98%)	260 (98%)	5 (2%)	57	75

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	E	265/271 (98%)	259 (98%)	6 (2%)	50	70
1	F	265/271 (98%)	259 (98%)	6 (2%)	50	70
1	G	262/271 (97%)	254 (97%)	8 (3%)	40	60
1	H	265/271 (98%)	261 (98%)	4 (2%)	65	80
1	I	265/271 (98%)	260 (98%)	5 (2%)	57	75
1	J	265/271 (98%)	261 (98%)	4 (2%)	65	80
1	K	265/271 (98%)	261 (98%)	4 (2%)	65	80
1	L	265/271 (98%)	261 (98%)	4 (2%)	65	80
1	M	265/271 (98%)	261 (98%)	4 (2%)	65	80
1	N	265/271 (98%)	261 (98%)	4 (2%)	65	80
1	O	265/271 (98%)	261 (98%)	4 (2%)	65	80
1	P	265/271 (98%)	261 (98%)	4 (2%)	65	80
All	All	4237/4336 (98%)	4160 (98%)	77 (2%)	59	76

All (77) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	67	ILE
1	A	107	LEU
1	A	142	MET
1	A	249	ASN
1	A	286	LEU
1	B	96	LYS
1	B	107	LEU
1	B	142	MET
1	B	249	ASN
1	B	286	LEU
1	C	67	ILE
1	C	107	LEU
1	C	142	MET
1	C	249	ASN
1	C	286	LEU
1	D	67	ILE
1	D	107	LEU
1	D	142	MET
1	D	249	ASN
1	D	286	LEU
1	E	67	ILE

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Mol	Chain	Res	Type
1	E	107	LEU
1	E	142	MET
1	E	249	ASN
1	E	286	LEU
1	E	306	GLN
1	F	67	ILE
1	F	107	LEU
1	F	142	MET
1	F	249	ASN
1	F	286	LEU
1	F	311	LEU
1	G	81	ARG
1	G	86	THR
1	G	89	ASP
1	G	91	ILE
1	G	107	LEU
1	G	142	MET
1	G	249	ASN
1	G	286	LEU
1	H	107	LEU
1	H	142	MET
1	H	249	ASN
1	H	286	LEU
1	I	67	ILE
1	I	107	LEU
1	I	142	MET
1	I	249	ASN
1	I	286	LEU
1	J	107	LEU
1	J	142	MET
1	J	249	ASN
1	J	286	LEU
1	K	107	LEU
1	K	142	MET
1	K	249	ASN
1	K	286	LEU
1	L	107	LEU
1	L	142	MET
1	L	249	ASN
1	L	286	LEU
1	M	107	LEU
1	M	142	MET

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Mol	Chain	Res	Type
1	M	249	ASN
1	M	286	LEU
1	N	107	LEU
1	N	142	MET
1	N	249	ASN
1	N	286	LEU
1	O	107	LEU
1	O	142	MET
1	O	249	ASN
1	O	286	LEU
1	P	107	LEU
1	P	142	MET
1	P	249	ASN
1	P	286	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (77) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	55	ASN
1	A	80	GLN
1	A	182	GLN
1	A	203	GLN
1	A	265	ASN
1	B	55	ASN
1	B	119	ASN
1	B	182	GLN
1	B	203	GLN
1	B	265	ASN
1	C	55	ASN
1	C	80	GLN
1	C	249	ASN
1	C	258	ASN
1	C	265	ASN
1	D	55	ASN
1	D	80	GLN
1	D	119	ASN
1	D	133	ASN
1	D	182	GLN
1	D	203	GLN
1	D	265	ASN
1	E	55	ASN
1	E	80	GLN

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Mol	Chain	Res	Type
1	E	119	ASN
1	E	258	ASN
1	E	265	ASN
1	F	55	ASN
1	F	80	GLN
1	F	182	GLN
1	F	203	GLN
1	F	249	ASN
1	F	265	ASN
1	G	55	ASN
1	G	265	ASN
1	H	80	GLN
1	H	182	GLN
1	H	203	GLN
1	I	55	ASN
1	I	80	GLN
1	I	182	GLN
1	I	203	GLN
1	I	265	ASN
1	J	119	ASN
1	J	182	GLN
1	J	203	GLN
1	J	265	ASN
1	K	182	GLN
1	K	203	GLN
1	L	55	ASN
1	L	80	GLN
1	L	119	ASN
1	L	182	GLN
1	L	203	GLN
1	L	258	ASN
1	L	265	ASN
1	M	80	GLN
1	M	182	GLN
1	M	203	GLN
1	N	80	GLN
1	N	119	ASN
1	N	182	GLN
1	N	203	GLN
1	N	265	ASN
1	O	55	ASN
1	O	80	GLN

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Mol	Chain	Res	Type
1	O	182	GLN
1	O	203	GLN
1	O	249	ASN
1	O	258	ASN
1	O	265	ASN
1	P	55	ASN
1	P	80	GLN
1	P	119	ASN
1	P	182	GLN
1	P	203	GLN
1	P	265	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

15 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	CIT	A	401	-	12,12,12	1.85	4 (33%)	17,17,17	3.12	9 (52%)
2	CIT	C	401	-	12,12,12	1.52	1 (8%)	17,17,17	1.82	7 (41%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	CIT	N	401	-	12,12,12	1.99	1 (8%)	17,17,17	3.62	10 (58%)
2	CIT	F	401	-	12,12,12	1.59	4 (33%)	17,17,17	2.96	9 (52%)
2	CIT	L	401	-	12,12,12	2.97	5 (41%)	17,17,17	3.15	4 (23%)
2	CIT	I	401	-	12,12,12	3.80	4 (33%)	17,17,17	2.77	6 (35%)
2	CIT	K	401	-	12,12,12	1.32	1 (8%)	17,17,17	2.56	9 (52%)
2	CIT	H	401	-	12,12,12	1.48	3 (25%)	17,17,17	2.37	6 (35%)
2	CIT	J	401	-	12,12,12	2.72	5 (41%)	17,17,17	2.54	7 (41%)
2	CIT	P	401	-	12,12,12	1.73	3 (25%)	17,17,17	2.34	6 (35%)
2	CIT	B	401	-	12,12,12	1.87	4 (33%)	17,17,17	4.38	11 (64%)
2	CIT	O	401	-	12,12,12	2.31	4 (33%)	17,17,17	2.78	6 (35%)
2	CIT	D	401	-	12,12,12	1.95	4 (33%)	17,17,17	4.74	10 (58%)
2	CIT	E	401	-	12,12,12	1.69	2 (16%)	17,17,17	4.53	11 (64%)
2	CIT	M	401	-	12,12,12	2.00	4 (33%)	17,17,17	3.95	12 (70%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	CIT	A	401	-	-	4/16/16/16	-
2	CIT	C	401	-	-	2/16/16/16	-
2	CIT	N	401	-	-	9/16/16/16	-
2	CIT	F	401	-	-	5/16/16/16	-
2	CIT	L	401	-	-	2/16/16/16	-
2	CIT	I	401	-	-	3/16/16/16	-
2	CIT	K	401	-	-	2/16/16/16	-
2	CIT	H	401	-	-	11/16/16/16	-
2	CIT	J	401	-	-	9/16/16/16	-
2	CIT	P	401	-	-	6/16/16/16	-
2	CIT	B	401	-	-	11/16/16/16	-
2	CIT	O	401	-	-	10/16/16/16	-
2	CIT	D	401	-	-	8/16/16/16	-
2	CIT	E	401	-	-	5/16/16/16	-
2	CIT	M	401	-	-	9/16/16/16	-

All (49) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	I	401	CIT	C3-C6	8.17	1.61	1.53
2	L	401	CIT	C2-C3	-7.67	1.44	1.53
2	I	401	CIT	C2-C1	7.21	1.72	1.50
2	J	401	CIT	C2-C3	5.84	1.61	1.53
2	N	401	CIT	C4-C3	5.06	1.60	1.53
2	O	401	CIT	C4-C3	4.91	1.59	1.53
2	I	401	CIT	C2-C3	4.85	1.59	1.53
2	M	401	CIT	C2-C3	4.44	1.59	1.53
2	A	401	CIT	C4-C3	-4.21	1.48	1.53
2	D	401	CIT	C4-C5	4.11	1.63	1.50
2	O	401	CIT	C3-C6	4.06	1.57	1.53
2	I	401	CIT	C4-C3	4.02	1.58	1.53
2	L	401	CIT	O7-C3	3.88	1.50	1.43
2	B	401	CIT	C4-C3	-3.58	1.49	1.53
2	J	401	CIT	O1-C1	3.50	1.33	1.22
2	P	401	CIT	C3-C6	3.47	1.57	1.53
2	C	401	CIT	O7-C3	3.43	1.49	1.43
2	J	401	CIT	O3-C5	3.23	1.32	1.22
2	J	401	CIT	C2-C1	-3.20	1.40	1.50
2	E	401	CIT	C4-C3	-3.13	1.49	1.53
2	E	401	CIT	C2-C3	-3.07	1.50	1.53
2	L	401	CIT	O4-C5	-3.04	1.20	1.30
2	D	401	CIT	C4-C3	-2.84	1.50	1.53
2	M	401	CIT	C3-C6	2.82	1.56	1.53
2	L	401	CIT	C3-C6	-2.62	1.50	1.53
2	D	401	CIT	C2-C3	2.62	1.57	1.53
2	H	401	CIT	O7-C3	2.61	1.48	1.43
2	M	401	CIT	O4-C5	-2.60	1.22	1.30
2	O	401	CIT	O7-C3	2.54	1.48	1.43
2	P	401	CIT	O2-C1	-2.54	1.22	1.30
2	B	401	CIT	C4-C5	2.54	1.58	1.50
2	B	401	CIT	O2-C1	-2.53	1.22	1.30
2	F	401	CIT	C3-C6	-2.48	1.50	1.53
2	L	401	CIT	C4-C3	-2.39	1.50	1.53
2	K	401	CIT	C2-C3	-2.39	1.50	1.53
2	P	401	CIT	C4-C3	2.37	1.56	1.53
2	B	401	CIT	O6-C6	-2.34	1.21	1.30
2	D	401	CIT	O2-C1	-2.33	1.22	1.30
2	O	401	CIT	C2-C3	2.22	1.56	1.53
2	A	401	CIT	O4-C5	-2.20	1.23	1.30
2	A	401	CIT	C3-C6	-2.15	1.51	1.53
2	J	401	CIT	O2-C1	-2.12	1.23	1.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	M	401	CIT	O7-C3	2.10	1.47	1.43
2	F	401	CIT	O6-C6	-2.08	1.22	1.30
2	H	401	CIT	O3-C5	2.07	1.29	1.22
2	F	401	CIT	O7-C3	2.04	1.47	1.43
2	F	401	CIT	O4-C5	-2.03	1.23	1.30
2	H	401	CIT	C4-C5	2.01	1.56	1.50
2	A	401	CIT	O6-C6	-2.00	1.22	1.30

All (123) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	E	401	CIT	O7-C3-C2	-13.52	77.76	109.40
2	D	401	CIT	O7-C3-C6	-11.25	93.07	108.86
2	B	401	CIT	O7-C3-C4	-10.48	84.87	109.40
2	D	401	CIT	C4-C3-C6	9.47	130.45	110.11
2	L	401	CIT	O7-C3-C2	-9.39	87.42	109.40
2	N	401	CIT	O6-C6-C3	8.68	128.12	113.05
2	B	401	CIT	C4-C3-C6	8.65	128.70	110.11
2	M	401	CIT	O7-C3-C4	-8.14	90.36	109.40
2	I	401	CIT	O6-C6-C3	7.89	126.75	113.05
2	D	401	CIT	O7-C3-C4	-7.80	91.16	109.40
2	B	401	CIT	O5-C6-C3	7.15	132.38	122.25
2	A	401	CIT	C3-C2-C1	6.82	130.34	113.81
2	F	401	CIT	C3-C2-C1	6.67	129.96	113.81
2	M	401	CIT	O7-C3-C6	-6.50	99.74	108.86
2	E	401	CIT	O6-C6-C3	5.90	123.29	113.05
2	O	401	CIT	O6-C6-C3	5.81	123.14	113.05
2	O	401	CIT	C3-C4-C5	5.78	127.81	113.81
2	P	401	CIT	O6-C6-C3	5.78	123.08	113.05
2	K	401	CIT	O7-C3-C6	5.72	116.89	108.86
2	N	401	CIT	O7-C3-C6	-5.71	100.85	108.86
2	H	401	CIT	O6-C6-C3	5.46	122.53	113.05
2	F	401	CIT	O2-C1-C2	5.43	131.79	114.35
2	A	401	CIT	O7-C3-C6	-5.33	101.37	108.86
2	D	401	CIT	O4-C5-O3	-5.32	110.03	123.30
2	D	401	CIT	O6-C6-C3	5.30	122.25	113.05
2	J	401	CIT	O7-C3-C6	-5.28	101.45	108.86
2	M	401	CIT	O6-C6-C3	5.26	122.19	113.05
2	E	401	CIT	O7-C3-C6	5.05	115.96	108.86
2	N	401	CIT	O5-C6-C3	-4.99	115.18	122.25
2	L	401	CIT	O7-C3-C4	4.93	120.93	109.40
2	M	401	CIT	C4-C3-C6	4.90	120.62	110.11

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	E	401	CIT	O5-C6-C3	-4.88	115.34	122.25
2	L	401	CIT	O7-C3-C6	4.82	115.63	108.86
2	J	401	CIT	O6-C6-C3	4.79	121.38	113.05
2	J	401	CIT	C3-C4-C5	-4.76	102.28	113.81
2	M	401	CIT	O4-C5-O3	-4.72	111.54	123.30
2	A	401	CIT	C4-C3-C6	4.70	120.21	110.11
2	N	401	CIT	C2-C3-C6	4.69	120.18	110.11
2	M	401	CIT	O2-C1-O1	-4.59	111.86	123.30
2	E	401	CIT	C3-C4-C5	4.59	124.92	113.81
2	A	401	CIT	O4-C5-O3	-4.55	111.95	123.30
2	O	401	CIT	C4-C3-C2	4.51	120.92	109.16
2	B	401	CIT	O7-C3-C6	-4.36	102.74	108.86
2	E	401	CIT	C4-C3-C2	4.22	120.18	109.16
2	K	401	CIT	O7-C3-C2	-4.12	99.75	109.40
2	I	401	CIT	O7-C3-C4	-4.10	99.80	109.40
2	B	401	CIT	O4-C5-C4	4.06	127.38	114.35
2	O	401	CIT	O7-C3-C2	-4.04	99.96	109.40
2	N	401	CIT	O4-C5-O3	-4.03	113.26	123.30
2	N	401	CIT	C3-C2-C1	4.00	123.50	113.81
2	M	401	CIT	C3-C4-C5	-3.98	104.18	113.81
2	F	401	CIT	O1-C1-C2	-3.89	111.58	122.94
2	B	401	CIT	O3-C5-C4	-3.76	111.96	122.94
2	B	401	CIT	O6-C6-O5	-3.73	111.94	123.82
2	P	401	CIT	C4-C3-C6	3.69	118.03	110.11
2	M	401	CIT	C3-C2-C1	3.64	122.63	113.81
2	K	401	CIT	O2-C1-O1	-3.64	114.22	123.30
2	D	401	CIT	O2-C1-O1	-3.44	114.73	123.30
2	E	401	CIT	O3-C5-C4	-3.38	113.06	122.94
2	A	401	CIT	C2-C3-C6	3.33	117.26	110.11
2	H	401	CIT	O4-C5-C4	3.29	124.92	114.35
2	I	401	CIT	O6-C6-O5	-3.27	113.41	123.82
2	C	401	CIT	O2-C1-C2	3.26	124.81	114.35
2	A	401	CIT	O4-C5-C4	3.26	124.81	114.35
2	D	401	CIT	O2-C1-C2	3.25	124.80	114.35
2	P	401	CIT	C3-C4-C5	3.22	121.60	113.81
2	N	401	CIT	O7-C3-C2	-3.19	101.93	109.40
2	F	401	CIT	O6-C6-C3	3.13	118.48	113.05
2	N	401	CIT	O7-C3-C4	3.12	116.71	109.40
2	L	401	CIT	C3-C4-C5	3.09	121.29	113.81
2	F	401	CIT	O4-C5-C4	3.05	124.14	114.35
2	K	401	CIT	O4-C5-C4	3.03	124.09	114.35
2	I	401	CIT	O4-C5-O3	-3.03	115.75	123.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	J	401	CIT	O6-C6-O5	-2.90	114.60	123.82
2	H	401	CIT	O2-C1-O1	-2.90	116.08	123.30
2	C	401	CIT	C3-C2-C1	2.87	120.76	113.81
2	P	401	CIT	O7-C3-C6	-2.87	104.84	108.86
2	F	401	CIT	O7-C3-C6	2.85	112.86	108.86
2	F	401	CIT	O2-C1-O1	-2.85	116.21	123.30
2	D	401	CIT	O6-C6-O5	-2.84	114.77	123.82
2	A	401	CIT	O7-C3-C4	-2.83	102.77	109.40
2	I	401	CIT	O4-C5-C4	2.82	123.41	114.35
2	H	401	CIT	O7-C3-C4	-2.79	102.86	109.40
2	H	401	CIT	C3-C2-C1	2.77	120.52	113.81
2	E	401	CIT	O4-C5-C4	2.75	123.20	114.35
2	C	401	CIT	O7-C3-C4	2.75	115.84	109.40
2	K	401	CIT	O3-C5-C4	-2.72	114.99	122.94
2	F	401	CIT	O4-C5-O3	-2.72	116.53	123.30
2	I	401	CIT	O2-C1-O1	-2.71	116.53	123.30
2	M	401	CIT	C4-C3-C2	2.65	116.06	109.16
2	K	401	CIT	C4-C3-C6	-2.63	104.44	110.11
2	C	401	CIT	C3-C4-C5	2.60	120.12	113.81
2	B	401	CIT	C2-C3-C6	2.60	115.70	110.11
2	O	401	CIT	O6-C6-O5	-2.59	115.57	123.82
2	A	401	CIT	C3-C4-C5	-2.58	107.56	113.81
2	B	401	CIT	O1-C1-C2	2.57	130.44	122.94
2	C	401	CIT	O1-C1-C2	-2.56	115.46	122.94
2	F	401	CIT	O7-C3-C4	-2.50	103.55	109.40
2	E	401	CIT	O7-C3-C4	2.49	115.23	109.40
2	M	401	CIT	O2-C1-C2	2.48	122.30	114.35
2	D	401	CIT	C4-C3-C2	2.44	115.54	109.16
2	M	401	CIT	O4-C5-C4	2.39	122.04	114.35
2	K	401	CIT	O2-C1-C2	2.37	121.95	114.35
2	P	401	CIT	O6-C6-O5	-2.34	116.37	123.82
2	H	401	CIT	O3-C5-C4	-2.31	116.19	122.94
2	N	401	CIT	O6-C6-O5	-2.31	116.47	123.82
2	K	401	CIT	C4-C3-C2	2.31	115.17	109.16
2	M	401	CIT	O5-C6-C3	-2.26	119.06	122.25
2	B	401	CIT	O2-C1-C2	-2.25	107.11	114.35
2	J	401	CIT	C3-C2-C1	2.25	119.27	113.81
2	J	401	CIT	O2-C1-O1	-2.25	117.70	123.30
2	K	401	CIT	O5-C6-C3	2.24	125.43	122.25
2	N	401	CIT	O3-C5-C4	2.23	129.47	122.94
2	C	401	CIT	C4-C3-C2	-2.23	103.33	109.16
2	E	401	CIT	C2-C3-C6	2.23	114.89	110.11

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	J	401	CIT	C4-C3-C6	2.19	114.81	110.11
2	E	401	CIT	O2-C1-C2	2.17	121.33	114.35
2	D	401	CIT	O4-C5-C4	2.16	121.30	114.35
2	P	401	CIT	O4-C5-O3	-2.15	117.94	123.30
2	B	401	CIT	C3-C4-C5	-2.09	108.76	113.81
2	A	401	CIT	O6-C6-C3	2.05	116.60	113.05
2	C	401	CIT	O6-C6-C3	2.03	116.57	113.05
2	O	401	CIT	C4-C3-C6	-2.00	105.80	110.11

There are no chirality outliers.

All (96) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	401	CIT	C1-C2-C3-C6
2	B	401	CIT	C1-C2-C3-C4
2	B	401	CIT	C6-C3-C4-C5
2	B	401	CIT	O7-C3-C6-O5
2	B	401	CIT	O7-C3-C6-O6
2	B	401	CIT	C4-C3-C6-O5
2	B	401	CIT	C4-C3-C6-O6
2	D	401	CIT	C6-C3-C4-C5
2	D	401	CIT	O7-C3-C6-O5
2	D	401	CIT	O7-C3-C6-O6
2	E	401	CIT	C2-C3-C4-C5
2	F	401	CIT	C1-C2-C3-O7
2	F	401	CIT	C1-C2-C3-C6
2	H	401	CIT	C2-C3-C4-C5
2	H	401	CIT	O7-C3-C4-C5
2	H	401	CIT	C6-C3-C4-C5
2	H	401	CIT	O7-C3-C6-O5
2	H	401	CIT	O7-C3-C6-O6
2	H	401	CIT	C4-C3-C6-O5
2	H	401	CIT	C4-C3-C6-O6
2	I	401	CIT	C2-C3-C4-C5
2	J	401	CIT	O7-C3-C6-O5
2	J	401	CIT	O7-C3-C6-O6
2	J	401	CIT	C4-C3-C6-O6
2	L	401	CIT	O7-C3-C6-O5
2	M	401	CIT	C1-C2-C3-O7
2	M	401	CIT	C1-C2-C3-C4
2	M	401	CIT	C6-C3-C4-C5
2	M	401	CIT	O7-C3-C6-O5

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Mol	Chain	Res	Type	Atoms
2	M	401	CIT	O7-C3-C6-O6
2	N	401	CIT	C1-C2-C3-C4
2	N	401	CIT	C1-C2-C3-C6
2	A	401	CIT	C1-C2-C3-O7
2	A	401	CIT	C6-C3-C4-C5
2	I	401	CIT	O7-C3-C4-C5
2	N	401	CIT	C1-C2-C3-O7
2	P	401	CIT	C1-C2-C3-C6
2	D	401	CIT	C1-C2-C3-C4
2	I	401	CIT	C6-C3-C4-C5
2	O	401	CIT	C2-C3-C4-C5
2	P	401	CIT	C6-C3-C4-C5
2	N	401	CIT	C4-C3-C6-O5
2	B	401	CIT	O7-C3-C4-C5
2	F	401	CIT	C1-C2-C3-C4
2	O	401	CIT	C6-C3-C4-C5
2	B	401	CIT	C2-C3-C4-C5
2	H	401	CIT	C1-C2-C3-O7
2	P	401	CIT	C1-C2-C3-O7
2	E	401	CIT	O7-C3-C6-O5
2	N	401	CIT	O7-C3-C6-O5
2	D	401	CIT	C4-C3-C6-O5
2	D	401	CIT	C4-C3-C6-O6
2	J	401	CIT	C4-C3-C6-O5
2	M	401	CIT	C4-C3-C6-O5
2	M	401	CIT	C4-C3-C6-O6
2	N	401	CIT	C4-C3-C6-O6
2	O	401	CIT	C2-C3-C6-O6
2	O	401	CIT	C1-C2-C3-O7
2	A	401	CIT	C1-C2-C3-C4
2	E	401	CIT	C2-C3-C6-O6
2	N	401	CIT	C2-C3-C6-O6
2	O	401	CIT	C2-C3-C6-O5
2	O	401	CIT	C4-C3-C6-O6
2	B	401	CIT	C1-C2-C3-O7
2	H	401	CIT	C1-C2-C3-C4
2	J	401	CIT	C1-C2-C3-O7
2	O	401	CIT	O7-C3-C4-C5
2	D	401	CIT	C1-C2-C3-O7
2	M	401	CIT	C1-C2-C3-C6
2	F	401	CIT	O2-C1-C2-C3
2	E	401	CIT	O7-C3-C6-O6

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Mol	Chain	Res	Type	Atoms
2	L	401	CIT	O7-C3-C6-O6
2	J	401	CIT	C2-C3-C6-O5
2	O	401	CIT	C4-C3-C6-O5
2	P	401	CIT	C2-C3-C6-O5
2	P	401	CIT	C2-C3-C6-O6
2	F	401	CIT	O1-C1-C2-C3
2	O	401	CIT	O2-C1-C2-C3
2	N	401	CIT	C3-C4-C5-O4
2	H	401	CIT	C3-C4-C5-O4
2	O	401	CIT	O1-C1-C2-C3
2	D	401	CIT	C2-C3-C4-C5
2	C	401	CIT	O1-C1-C2-C3
2	H	401	CIT	C3-C4-C5-O3
2	N	401	CIT	C3-C4-C5-O3
2	J	401	CIT	C1-C2-C3-C4
2	P	401	CIT	C2-C3-C4-C5
2	E	401	CIT	O1-C1-C2-C3
2	B	401	CIT	C3-C4-C5-O3
2	B	401	CIT	C3-C4-C5-O4
2	J	401	CIT	O1-C1-C2-C3
2	K	401	CIT	C3-C4-C5-O3
2	J	401	CIT	O2-C1-C2-C3
2	M	401	CIT	C3-C4-C5-O4
2	C	401	CIT	O2-C1-C2-C3
2	K	401	CIT	C3-C4-C5-O4

There are no ring outliers.

12 monomers are involved in 31 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	401	CIT	1	0
2	N	401	CIT	5	0
2	F	401	CIT	1	0
2	L	401	CIT	7	0
2	I	401	CIT	2	0
2	K	401	CIT	1	0
2	H	401	CIT	2	0
2	J	401	CIT	6	0
2	B	401	CIT	3	0
2	O	401	CIT	1	0
2	D	401	CIT	1	0
2	E	401	CIT	1	0

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q < 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	313/320 (97%)	-0.05	1 (0%) 94 93	4, 16, 38, 69	0
1	B	313/320 (97%)	-0.02	1 (0%) 94 93	4, 13, 34, 65	0
1	C	313/320 (97%)	0.11	4 (1%) 77 75	5, 20, 43, 66	0
1	D	313/320 (97%)	0.10	4 (1%) 77 75	4, 19, 35, 58	0
1	E	313/320 (97%)	-0.02	3 (0%) 82 80	3, 14, 35, 57	0
1	F	313/320 (97%)	0.15	6 (1%) 66 64	4, 20, 42, 77	0
1	G	309/320 (96%)	0.33	15 (4%) 29 28	5, 19, 41, 84	0
1	H	313/320 (97%)	0.29	23 (7%) 15 13	5, 25, 42, 62	0
1	I	313/320 (97%)	0.62	20 (6%) 19 18	9, 24, 44, 73	0
1	J	313/320 (97%)	0.45	23 (7%) 15 13	8, 21, 40, 65	0
1	K	313/320 (97%)	0.42	17 (5%) 25 24	8, 28, 46, 68	0
1	L	313/320 (97%)	0.12	5 (1%) 72 70	7, 21, 41, 63	0
1	M	313/320 (97%)	0.21	9 (2%) 51 50	6, 21, 46, 75	0
1	N	313/320 (97%)	0.22	10 (3%) 47 46	7, 20, 40, 58	0
1	O	313/320 (97%)	0.31	17 (5%) 25 24	6, 24, 59, 91	0
1	P	313/320 (97%)	0.99	60 (19%) 1 0	9, 32, 56, 80	0
All	All	5004/5120 (97%)	0.26	218 (4%) 34 33	3, 21, 45, 91	0

All (218) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	P	1	MET	14.3
1	M	1	MET	8.9
1	G	1	MET	8.1
1	G	177	LEU	8.0
1	B	1	MET	7.0

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Mol	Chain	Res	Type	RSRZ
1	J	109	CYS	7.0
1	L	1	MET	6.8
1	C	1	MET	6.7
1	N	1	MET	6.0
1	I	1	MET	6.0
1	K	1	MET	5.9
1	F	1	MET	5.8
1	P	301	VAL	5.7
1	E	1	MET	5.5
1	J	1	MET	5.2
1	G	173	GLY	5.0
1	P	177	LEU	5.0
1	P	308	ALA	4.9
1	P	133	ASN	4.8
1	P	136	HIS	4.8
1	P	306	GLN	4.6
1	J	36	GLY	4.5
1	G	174	HIS	4.4
1	P	90	LEU	4.4
1	P	309	PHE	4.3
1	P	265	ASN	4.3
1	K	311	LEU	4.2
1	P	312	ILE	4.2
1	P	268	VAL	4.1
1	A	1	MET	4.1
1	P	131	PHE	4.1
1	P	262	ASN	4.0
1	K	288	LYS	4.0
1	H	293	LEU	4.0
1	P	214	ARG	3.9
1	P	31	TYR	3.8
1	I	84	GLY	3.7
1	P	297	SER	3.7
1	D	1	MET	3.7
1	H	136	HIS	3.6
1	I	204	ASN	3.6
1	K	259	GLY	3.6
1	M	110	SER	3.5
1	O	312	ILE	3.5
1	J	312	ILE	3.4
1	I	222	LYS	3.4
1	L	133	ASN	3.4

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Mol	Chain	Res	Type	RSRZ
1	P	111	LYS	3.4
1	O	1	MET	3.4
1	I	179	VAL	3.4
1	J	101	VAL	3.4
1	I	105	VAL	3.3
1	M	86	THR	3.3
1	H	133	ASN	3.3
1	N	197	LYS	3.3
1	J	107	LEU	3.3
1	J	61	THR	3.3
1	P	139	ILE	3.2
1	P	88	GLU	3.2
1	P	257	LEU	3.2
1	D	288	LYS	3.2
1	P	202	SER	3.2
1	J	8	GLY	3.2
1	O	85	MET	3.2
1	O	308	ALA	3.1
1	P	299	ALA	3.1
1	O	82	LYS	3.1
1	P	178	MET	3.1
1	O	80	GLN	3.1
1	P	106	LYS	3.1
1	K	297	SER	3.1
1	P	110	SER	3.1
1	P	280	HIS	3.1
1	H	214	ARG	3.1
1	P	61	THR	3.1
1	K	67	ILE	3.1
1	H	90	LEU	3.1
1	P	101	VAL	3.0
1	P	108	HIS	3.0
1	P	288	LYS	3.0
1	K	266	LEU	3.0
1	O	90	LEU	2.9
1	J	75	ILE	2.9
1	P	132	SER	2.9
1	P	263	CYS	2.9
1	P	126	ASN	2.9
1	I	199	ASN	2.9
1	N	63	GLN	2.9
1	J	108	HIS	2.9

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Mol	Chain	Res	Type	RSRZ
1	N	93	VAL	2.8
1	P	197	LYS	2.8
1	H	288	LYS	2.8
1	M	313	LYS	2.8
1	M	35	PRO	2.8
1	D	107	LEU	2.8
1	H	177	LEU	2.8
1	K	136	HIS	2.8
1	O	67	ILE	2.7
1	P	64	ILE	2.7
1	P	258	ASN	2.7
1	H	312	ILE	2.7
1	O	101	VAL	2.7
1	I	86	THR	2.7
1	P	33	VAL	2.6
1	F	204	ASN	2.6
1	K	133	ASN	2.6
1	H	203	GLN	2.6
1	J	35	PRO	2.6
1	O	89	ASP	2.6
1	O	81	ARG	2.6
1	I	198	LYS	2.6
1	H	202	SER	2.6
1	P	264	SER	2.6
1	H	287	THR	2.6
1	O	107	LEU	2.6
1	P	216	MET	2.6
1	N	207	GLN	2.5
1	P	123	ILE	2.5
1	G	132	SER	2.5
1	O	180	PRO	2.5
1	P	92	GLY	2.5
1	H	223	LEU	2.5
1	G	175	GLY	2.5
1	H	197	LYS	2.5
1	P	256	TYR	2.5
1	I	96	LYS	2.4
1	O	177	LEU	2.4
1	P	59	LEU	2.4
1	G	69	ASP	2.4
1	J	7	ILE	2.4
1	M	63	GLN	2.4

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Mol	Chain	Res	Type	RSRZ
1	I	203	GLN	2.4
1	I	218	ALA	2.4
1	C	300	SER	2.4
1	P	130	LYS	2.4
1	D	133	ASN	2.4
1	P	69	ASP	2.4
1	M	107	LEU	2.4
1	N	192	LEU	2.4
1	G	304	ASN	2.4
1	H	106	LYS	2.4
1	K	292	ASP	2.4
1	P	140	CYS	2.4
1	H	117	VAL	2.4
1	I	33	VAL	2.4
1	M	208	GLU	2.4
1	J	289	GLU	2.4
1	J	265	ASN	2.3
1	O	311	LEU	2.3
1	P	294	TYR	2.3
1	G	133	ASN	2.3
1	L	107	LEU	2.3
1	P	289	GLU	2.3
1	P	307	LYS	2.3
1	H	210	ILE	2.3
1	I	220	ILE	2.3
1	H	204	ASN	2.3
1	P	135	PRO	2.3
1	K	284	PHE	2.3
1	E	313	LYS	2.3
1	O	223	LEU	2.3
1	E	204	ASN	2.3
1	P	277	LYS	2.3
1	G	172	GLY	2.3
1	P	303	SER	2.3
1	I	63	GLN	2.2
1	G	176	ASP	2.2
1	J	298	ILE	2.2
1	L	52	LEU	2.2
1	K	204	ASN	2.2
1	P	204	ASN	2.2
1	P	179	VAL	2.2
1	G	312	ILE	2.2

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Mol	Chain	Res	Type	RSRZ
1	C	90	LEU	2.2
1	G	90	LEU	2.2
1	P	261	TYR	2.2
1	F	289	GLU	2.2
1	G	158	LYS	2.2
1	J	313	LYS	2.2
1	F	36	GLY	2.2
1	P	206	ILE	2.2
1	I	83	GLU	2.2
1	N	286	LEU	2.2
1	N	289	GLU	2.2
1	P	103	GLU	2.2
1	H	292	ASP	2.2
1	I	223	LEU	2.2
1	N	110	SER	2.2
1	J	288	LYS	2.2
1	K	258	ASN	2.2
1	K	177	LEU	2.2
1	J	77	ALA	2.1
1	O	84	GLY	2.1
1	F	107	LEU	2.1
1	P	99	LYS	2.1
1	H	1	MET	2.1
1	I	62	ASN	2.1
1	L	68	LYS	2.1
1	G	89	ASP	2.1
1	J	62	ASN	2.1
1	M	177	LEU	2.1
1	I	68	LYS	2.1
1	K	215	ASN	2.1
1	J	226	ALA	2.1
1	P	94	ASN	2.1
1	J	97	ILE	2.1
1	J	210	ILE	2.1
1	H	311	LEU	2.1
1	C	307	LYS	2.1
1	K	107	LEU	2.0
1	H	111	LYS	2.0
1	K	289	GLU	2.0
1	H	207	GLN	2.0
1	I	111	LYS	2.0
1	H	33	VAL	2.0

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Mol	Chain	Res	Type	RSRZ
1	N	78	GLY	2.0
1	F	52	LEU	2.0
1	J	31	TYR	2.0

6.2 Non-standard residues in protein, DNA, RNA chains [i](#)

There are no non-standard protein/DNA/RNA residues in this entry.

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
2	CIT	I	401	13/13	0.75	0.24	28,31,32,34	0
2	CIT	O	401	13/13	0.81	0.32	40,53,62,65	0
2	CIT	J	401	13/13	0.83	0.19	17,20,26,29	0
2	CIT	K	401	13/13	0.87	0.16	23,27,30,32	0
2	CIT	N	401	13/13	0.88	0.17	14,15,18,21	0
2	CIT	H	401	13/13	0.88	0.17	19,21,24,26	0
2	CIT	P	401	13/13	0.89	0.16	26,27,32,32	0
2	CIT	C	401	13/13	0.90	0.18	20,25,28,29	0
2	CIT	A	401	13/13	0.91	0.17	14,17,27,28	0
2	CIT	D	401	13/13	0.92	0.16	12,17,21,26	0
2	CIT	F	401	13/13	0.92	0.15	18,22,27,31	0
2	CIT	M	401	13/13	0.92	0.16	22,23,23,27	0
2	CIT	E	401	13/13	0.94	0.17	10,14,17,19	0
2	CIT	B	401	13/13	0.96	0.14	7,9,14,21	0
2	CIT	L	401	13/13	0.96	0.16	17,21,27,32	0

6.5 Other polymers [i](#)

There are no such residues in this entry.